



*Source Control Measure Work Plan
Swan Island Upland Facility
Operable Unit 5
Portland, Oregon*

Prepared for:
Port of Portland

January 17, 2014
1115-16

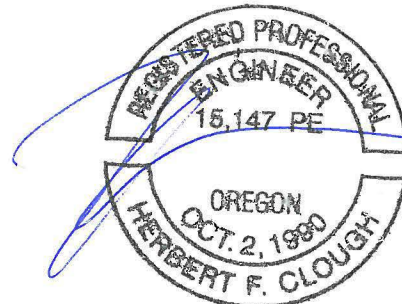


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*Michael Pickering, R.G.
Senior Associate Hydrogeologist*



EXPIRES: DEC. 31, 2015

*Herb Clough, P.E.
Principal Engineer*

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1.0 Introduction

This work plan presents the design of the Source Control Measure (SCM) for the Swan Island Upland Facility (SIUF; ECSI Site No. 271), Operable Unit 5 (OU5), Portland, Oregon. The source control is being performed as part of a Voluntary Agreement for Remedial Investigation, Source Control Measures, and Feasibility Study for the SIUF between the Port of Portland (Port) and the Oregon Department of Environmental Quality (DEQ), dated July 24, 2006.

1.1 Purpose and Scope

The purpose of this work plan is to present the SCM design to obtain approval of the DEQ, obtain permits, and guide the subcontractors completing the work.

1.2 Work Plan Organization

The work plan text describes the SCM for OU5, including background information and prior work (Section 2) and each element of the work (Section 3). Information supporting the text is presented in figures and appendices. Specifically, the following information is presented in appendices.

- Site Photographs, Appendix A – Representative photographs of OU5 are presented in Appendix A.
- Soil Sampling Results, Appendix B – Tables and sample location plans excerpted from prior documents are included in Appendix B.
- Drawings and Specifications, Appendix C – Design drawings and specifications were prepared for the SCM. These are stand-alone documents to be provided to subcontractors responsible for construction of the SCM.

2.0 Background

2.1 Site Description

The project site is a portion of the riverbank of OU5 between the top of bank and the ordinary line of high water (OLHW). OU5 is a portion of the SIUF. Figure 1 shows the location of the SIUF. Figure 2 shows the boundary of OU5 and the SCM site. OU5 is the riverbank above the OLHW, covers an area of approximately 3.5 acres, and consists of rocky soil with some debris covered with willows, Himalayan blackberry, and weedy vegetation. Prior to 2014, OU5 was part of OU2. Photographs showing the typical riverbank condition are included in Appendix A. A variety of willow species (e.g., Pacific, Columbia River, and Piper's Willow) and black cottonwood saplings have become established on the beach.

2.2 Summary of Site Investigation

Since 2000, the Port has completed facility-wide investigation activities, including sampling of riverbank surface soils. The source control evaluation and addendum includes the data collected in those investigations (Ash Creek, 2010 and 2011c). Appendix B shows the sample locations and lists the soil analytical data.

Samples RB-1, RB-2, and RB-3. Three samples were collected during removal of storm water pipes (WR-159, -160 and -164) in August 2006 (Ash Creek, 2007). These storm water lines were installed in the 1980s to drain portions of the upland areas. The samples were analyzed for polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), metals, and total petroleum hydrocarbons (TPH).

Samples RB-4 through RB-7. In October 2007, a riverbank reconnaissance identified three inactive outfall pipes (CG-26, CG-27, and WR-159a) and one active outfall (WR-399) on the OU5 (at that time OU2) riverbank. Surface soil samples were collected at outfalls WR-399, CG-26, CG-27, and WR-159a in October 2008 (Ash Creek, 2009). The samples were analyzed for PCBs, PAHs, metals, phthalates, TPH, and tributyltin.

Additional Riverbank Sampling (Comp A, Comp B, and RB-8 Through RB-15). In response to DEQ comments on the source control evaluation (SCE) and information obtained from further historical research and site reconnaissance, the Port collected additional soil samples as follows.

- Historical information indicated that the location of former Substation A was on a platform over the riverbank. Prior sampling was not conducted in that area, so additional surface soil sampling (Comp A and Comp B) was conducted beneath and around former Substation A and samples were analyzed for PCBs.
- During a reconnaissance of the riverbank, areas of erosion were observed. Representative samples were collected from these areas (RB-8a and b through RB-15a and b) and analyzed for metals, PAHs, PCBs, and butyl tins.

The results of the additional surface soil/riverbank sampling at OU2 (including what is now OU5) are presented in letter reports (Ash Creek, 2011a and 2011b).

Relevant data from the sampling are included in the tables and figures in Appendix B.

2.3 Source Control Evaluation, Source Control Alternative Evaluation, and Ecological Risk Assessment

The SCE (Ash Creek, 2010 and 2011c) for OU2/OU5 evaluated the range of potential transport mechanisms and source materials and concluded that erosion of bank soil is the only pathway and source

that warrants a source control measure. Riverbank soils contain arsenic, cadmium, copper, lead, zinc, anthracene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, and PCBs at concentrations above respective screening level values. Higher relative concentrations are located in the area of two sample locations, RB-9 and RB-10. Additionally, the ecological risk assessment for OU2/OU5 (Formation, 2012) identified that surface soil contains metals above ecological screening levels, especially in the vicinity of RB-9 and RB-10. The ecological risk assessment concluded that the overall ecological risk for OU2/OU5 was acceptable (see further discussion below).

An SCM evaluation (Ash Creek, 2012) was completed to identify an appropriate SCM for the OU2 riverbank (now OU5). The objective of the SCM is to prevent erosion of soil in the vicinity of RB-9 and RB-10. The recommended SCM for OU5 soils was riprap armoring and re-grading/re-vegetation in the vicinity of RB-9 and RB-10. This alternative was selected because it provides a low-cost, long-term erosion control solution; it is highly implementable; and it is compatible with existing conditions and potential in-water remediation. Final DEQ approval has not been received. This work plan addressed only the recommended SCM.

In their comments on the ecological risk assessment (DEQ, 2013), DEQ indicated general concurrence with the overall conclusions of the ecological risk assessment, but requested additional sampling of surface soil in the vicinity of RB-9 and RB-10 to better assess ecological risk from metals. The additional surface soil sampling will be addressed in a separate work plan.

3.0 Bank Stabilization

3.1 Performance Standards

Bank stabilization will be implemented to address the objectives summarized in Section 2.3. Bank stabilization in the vicinity of RB-9 and RB-10 will meet the following performance standards.

- Steeper bank slopes will be stabilized with riprap.
- Disturbed areas with flatter bank slopes will be stabilized with native vegetation.

3.2 Basis of Design

Bank stabilization elements (slope steepness, surface finish) were designed based on observation of performance of the existing bank, summarized as follows.

- Erosion is generally not observed in rip-rapped areas. Existing riprap is typically 8-inch-minus rock (approximately 50 pounds or less).
- The existing riverbank above the OLHW is on the order of 2.5H:1V and is well vegetated.

-
- Erosion scarps appear to originate at the transition between riprap and the vegetated bank where vegetation is not well established. Erosion is generally not observed on the well-vegetated bank except where scarps have migrated up the bank from an origin at the riprap/vegetation transition.

3.3 Bank Stabilization Design

3.3.1 Target Stabilization

The target area for stabilization is the riverbank in the vicinity of the RB-9 and RB-10 erosion scarps. No work will be conducted below the OLHW. Sheet C-3 in Appendix C shows areas planned for stabilization and capping.

3.3.2 Site Clearing, Grubbing, and Grading

Vegetation will be removed as necessary to complete the stabilization. Vegetation will be cut near the surface with minimal disturbance of the soil. The vegetation will be composted on-site or disposed of offsite at a permitted solid waste facility as non-hazardous yard debris. Non-soil debris will be removed. Grubbed roots and debris will be disposed of in a solid waste landfill meeting Subtitle D design standards.

The upper portion of the erosion scarps will be graded upward on the slope to accommodate riprap placement. Details on Sheet C-4 in Appendix C show the final grading approach.

3.3.3 Riprap

After site grading, riprap will be placed at the slope transition marking the former location of the erosion scarp. The riverbank slope above the scarp location is approximately 2.5H:1V and the slope below the scarp location is approximately 5H:1V. The riprap will protect the vulnerable slope transition area from wave and current impacts. Riprap meeting the requirements of Oregon Department of Transportation (ODOT) specifications Section 00330.16 (Class 100) will be used. This size generally corresponds to the existing riprap present on the lower portion of the riverbank. Riprap will be placed as shown on the detail on Sheet C-4 in Appendix C. Filter fabric will be placed on the ground prior to placement of the riprap to prevent migration of the underlying soil through the riprap pore space.

3.3.4 Re-Vegetation

Disturbed soil in the RB-9/RB-10 area will be seeded with native grass mix and covered with mulch.

3.3.5 Construction Considerations

Access to the Site will be across property occupied by a Port tenant (DTNA) to store trucks and truck trailers. Construction activities will be coordinated with the tenant.

The work may be completed at the same time as a removal action on the adjacent upland property. Construction activities will be coordinated between the two projects.

3.4 Quality Assurance/Quality Control

Construction QA/QC will consist of the following elements.

- Site Clearing, Grubbing, and Grading – Verify that the following elements are consistent with design drawings/ specifications: no mixing of soil with vegetation; extent of site grading, and slope grades.
 - Observe and document with photographs that soil is not commingled with cut vegetation.
 - Verify that no work occurs below the OLHW by using a licensed surveyor to stake the OLHW. The stakes will be maintained throughout the work.
 - Verify slope grades with hand-held level and hand tape.
 - Document vegetation removal and grading progress with photographs.
- Riprap – Verify that the following elements are consistent with design drawings/ specifications: riprap gradation; fabric placement; and extent of riprap.
 - Verify that the maximum particle size is between 8 and 15 inches and that the material is well graded with particles sizes from sand to gravel.
 - Document with photographs placement of the filter fabric.
 - Observe and document with photographs that riprap is present in the slope transition areas.
- Re-Vegetation – Verify that the following elements are consistent with design drawings/specifications:
 - Verify with photographs that seed and mulch are placed on disturbed soil areas.

3.5 Health and Safety

Soil grading includes potentially hazardous activities that will be addressed by a health and safety plan. The activities addressed by the plan include:

- Physical hazards associated with clearing, grubbing, grading, filling, and planting; and
- Direct contact with soil or inhalation of dust during grading and sampling.

Apex will prepare a health and safety plan that governs Apex's oversight and sampling activities during construction. The contractor for the construction work will be required to prepare a health and safety plan governing their on-Site activities.

3.6 Environmental Protection

3.6.1 Emissions, Dust, and Spills

Site work will require disturbance of soil using petroleum-fueled, hydraulically controlled equipment. The following best management practices will be implemented to reduce emissions, reduce potential environmental impacts, and control dust.

- Equipment will be well-maintained.
- Where applicable, equipment will be required to use ultra-low-sulfur diesel.
- Equipment will not be allowed to idle when not in use.
- Refueling will not occur within 50 feet of a stormwater inlet or surface water.
- Contractors will be required to maintain a spill kit for immediate response in the event of a release of fuel or hydraulic fluid.
- Dust control will include wetting haul roads and covering stockpiles, as needed.

3.6.2 Erosion and Sedimentation

Site work has the potential to cause erosion or sedimentation problems. The work area will be protected from erosion and sediment transport by placing erosion control fencing around the work area.

3.7 Operations and Maintenance

There are no operations associated with the stabilization.

3.8 Closeout

Closeout will consist of preparation of a report documenting completion of the source control measure in accordance with the design documents.

3.9 Permitting

A grading permit will be obtained from the City of Portland.

3.10 Coordination, Schedule, and Reporting

Project Team Members. The following is an outline of the key roles involved with the project.

- Project Owner – The Port is the property owner and the party for which the work is being completed. Additionally, Port Landscaping will conduct the re-vegetation work.
- Access Route Property Tenant – DTNA is a tenant on the property used to access the Site.

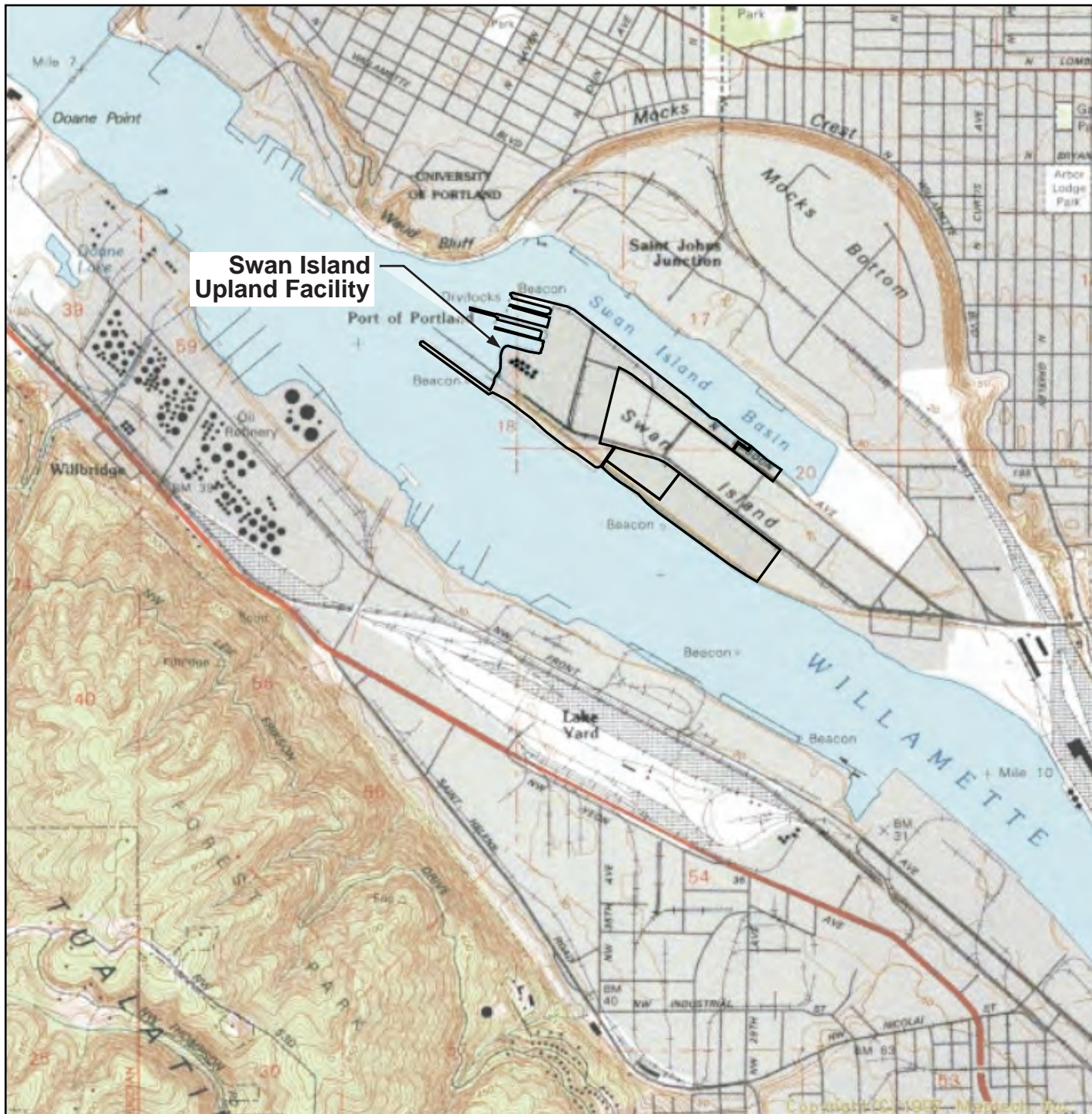
-
- Project Consultant – Apex Companies is the engineering consultant responsible for preparing the design, implementing the source control measure, and preparing project documentation.
 - DEQ – DEQ is the oversight agency.
 - Subcontractor – The removal action earthwork will be implemented by a subcontractor to Apex Companies, to be selected through a competitive procurement process.

Schedule. The overall goal is to complete the construction work prior to June 30, 2014. A detailed schedule will be prepared after selection of the construction subcontractor.

Reporting. Reporting will include progress reports during construction and the construction documentation report. In addition to the ongoing quarterly progress reports to DEQ, during construction, progress reports will be submitted via email. Progress reports will be submitted as needed, generally on a weekly basis. Progress reporting will be used to submit results of import fill sampling to obtain approval of the import material. The construction documentation report will describe the construction activities and present the results of quality assurance observations.

4.0 References

- Ash Creek, 2007. *Storm Water Piping Removal Oversight Memorandum, Swan Island Upland Facility, Portland, Oregon.* June 22, 2007.
- Ash Creek, 2009a. *OU2 Riverbank Soil Sampling and Pipe Abandonment, Swan Island Upland Facility, Portland, Oregon.* March 31, 2009.
- Ash Creek, 2010. *Source Control Evaluation, Operable Unit 2, Swan Island Upland Facility, Portland, Oregon.* April 15, 2010.
- Ash Creek, 2011a. *Letter from M. Pickering/Ash Creek to K. Madalinski/Port, Surface Soil Sampling Results — Operable Unit 2, Swan Island Upland Facility, Portland, Oregon.* November 29, 2011.
- Ash Creek, 2011b. *Letter from M. Pickering/Ash Creek to D. Leisle /Port, Riverbank Soil Sampling Results — Operable Unit 2, Swan Island Upland Facility, Portland, Oregon.* November 29, 2011.
- Ash Creek, 2011c. *Source Control Evaluation Addendum, Operable Unit 2, Swan Island Upland Facility.* December 27, 2011.
- Ash Creek, 2012. *Source Control Alternatives Evaluation, Operable Unit 2, Swan Island Upland Facility, Portland, Oregon.* November 16, 2012.
- DEQ/EPA, 2005. *Portland Harbor Joint Source Control Strategy – Final (Table 3-1 Updated July 16, 2007).* December 2005.
- DEQ, 2013. *Letter Re: DEQ Review "Level II Screening Ecological Risk Assessment OU2", ECSI No.271.* June 17, 2013.
- Formation Environmental, 2012. *Final Level II Screening Ecological Risk Assessment, Portland Shipyard, Operable Unit 2, Swan Island Upland Facility.* September 2012.



NOTE: Base map prepared from USGS 7.5-minute quadrangles as provided by Topozone. (1990)

0 2,000 4,000
Approximate Scale in Feet



Facility Location Map

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Swan Island Upland Facility Operable Unit 5
Portland, Oregon



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Project Number **1115-16.002**
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Figure
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